

Impacts of Visitor Spending on Local Economy: Colonial National Historical Park, 2001

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Executive Summary

Colonial National Historical Park hosted 3.28 million recreation visits in 2001. Park visitors spent \$310 million dollars within an hour driving distance of the park. The Virginia Tourism Commission estimates total traveler spending in the two county region (York county and James City county) at \$350 million in 2000, so the majority of tourists to the area visit the park at least once during their stay.

The park is, however, not the primary reason most visitors come to the area. Colonial Williamsburg is the primary attraction. The National Park attracts some visitors on its own, but more often is one of a variety of things to do and see while in the area. A typical visitor to the area spends three nights in the region and \$400 -\$800 on lodging, meals, admissions, and souvenirs. The park cannot lay claim to all of this spending.

Sorting out the unique contribution of Colonial NHP to economic activity in the region requires a few assumptions. Our estimates count a half-day's spending for most park visitors and one night's spending for 10% of the park visitors who are staying overnight in the area. This scenario yields \$40 million in spending or about 13% of the \$310 million that park visitors spend during their stay in the area.

Local economic impacts of this spending were estimated with the updated National Park Service Money Generation Model (Version 2). The MGM2 model uses park visitation data, spending averages from the 2001 Colonial NHP- Jamestown Island Visitor Survey and MGM2 multipliers to estimate spending, income and jobs attributable to the park.

The \$40 million in visitor spending attributed to the park has a direct effect on the local economy of 917 jobs, \$12.5 million in personal income, and \$18.6 million in value added. As our impact scenario does not count most spending on lodging, the greatest impacts in terms of sales are in the restaurant sector (\$16 million in sales), amusements/museums (\$7 million) and retail trade (\$5 million).

**Table E-1. Economic Impacts of Colonial NHP Visitor Spending :
Direct & Secondary Effects**

Sector/Spending category	Direct Sales \$000's	Jobs	Personal Income \$000's	Value Added \$000's
Direct Effects				
Motel, hotel cabin or B&B	3,447	56	1,124	1,708
Camping fees	103	2	33	51
Restaurants & bars	16,043	435	5,464	7,611
Amusements/museums	6,951	259	2,405	3,936
Local transportation	841	23	476	560
Retail Trade	5,133	131	2,618	4,090
Wholesale Trade	751	8	303	517
Local Production of goods	830	3	73	143
Total Direct Effects	34,098	917	12,497	18,616
Secondary Effects	14,866	205	5,311	9,179
Total Effects	\$ 48,964	1,122	\$ 17,808	\$ 27,795
Multiplier	1.44	1.22	1.42	1.49

The tourism sales multiplier for the area is 1.44, which means an additional \$.44 in secondary sales is generated for every dollar of direct sales. Secondary effects add \$14.9 million in sales, \$5.3 million in personal income, and roughly 200 additional jobs.

Tourism is the primary economic base of James City County, accounting for 40% of all jobs in the county. While Colonial NHP is not the principal tourist attraction in the region, the park preserves and interprets resources and events that are central to the historical themes of the area. The critical mass of attractions and the consistent theme provided by Colonial Williamsburg, Jamestown City, Colonial NHP, and other area attractions brings visitors to the area from considerable distances and encourages extended stays in the area. The spending of these visitors generates income to area residents and jobs.

Although we have made an effort here to isolate the contribution of Colonial NHP to the local economy, the park is best seen as part of the regional tourism picture. The MGM2 model may be readily adapted to capture all tourism activity in the region or to examine impacts of particular marketing and development actions. Further studies should be conducted to examine patterns of visitor activity while in the area, as a basis for increased cooperation and partnerships to better serve the visitor and enhance local economic impacts.

Impacts of Visitor Spending on Local Economy: Colonial National Historical Park, 2001

Introduction

The purpose of this study is to document the local economic impacts of visitors to Colonial National Historical Park (COLO) in 2001. Economic impacts are measured as the direct and secondary sales, income and jobs in the local area resulting from spending by park visitors. The economic estimates are produced using the Money Generation Model 2 (MGM2) (Stynes and Propst, 2000). Three major inputs to the model are:

- 1) Number of visits broken down by lodging-based segments,
- 2) Spending averages for each segment, and
- 3) Economic multipliers for the local region

Inputs are estimated from the Colonial National Historical Park – Jamestown Island Visitor Survey, National Park Service Public Use Statistics, and IMPLAN input-output modeling software. The MGM2 model provides a spreadsheet template for combining park use, spending and regional multipliers to compute changes in sales, personal income, jobs and value added in the region.

Colonial NHP poses several difficulties for estimating economic impacts. While the historic sites managed by the National Park Service are of considerable historic significance, Colonial Williamsburg is the primary attraction in the area. Busch Gardens Williamsburg, Jamestown Settlement and a host of other area attractions also compete for the visitors time and money. Given current information, it is not possible to isolate the unique contribution of Colonial NHP to economic activity in the area. The Colonial Parkway and the two distinct NPS sites at Yorktown and Jamestown also pose problems for counting visitors, as many visitors will be counted more than once during a stay in the area.

Our approach will therefore be to apply the MGM2 model first to all spending by park visitors in the area. We then estimate the National Park's contribution by treating most visits to Yorktown and Jamestown Island as essentially day trips, attributing roughly the equivalent of a half day's spending to these National Park visits. One night of lodging is counted for 10% of National Park visitors staying overnight in the area. This captures spending by overnight visitors whose primary purpose is to visit the NPS sites and assumes that roughly 10% of overnight visitors spend one extra night in the area in order to visits Colonial NHP sites.

Colonial National Historical Park

Colonial National Historical Park was established in 1936 to administer historically significant sites in southeast Virginia. The park includes Cape Henry National Memorial, Jamestown National Historic Site, Yorktown National Cemetery, Yorktown National Battlefield, and the 23-mile scenic Colonial Parkway. Two major park units are Jamestown Island, the first permanent English settlement in North America in 1607, and Yorktown Battlefield, the final

major battle of the American Revolutionary War in 1781. The two units are connected by the Colonial Parkway.

Colonial NHP is located on the Virginia Peninsula in southeastern Virginia. The park is about a 10-minute drive to Williamsburg and Hampton or an hour to Virginia Beach, Norfolk, Richmond, and Petersburg. Colonial Williamsburg is the primary tourist attraction in the region. The National Park administered historic sites at Jamestown and Yorktown are two of numerous other attractions in the area.

Total recreation visit to Colonial NHP was 3,282,461 in 2001 (Table 1). Peak visitation is from March to October with more than 300,000 recreation visits each month. The protocols for park visitor counts include 140,400 visitors arriving on bus tours (mostly from Colonial Williamsburg) each month from March through October. Annually, park use statistics indicate that bus tours account for 40% of total recreation visits to the park.

Table 1. NPS Public Use Data for Colonial NHP, 2001

Month	Recreation visits	Pct of recreation visits
January	122,876	4%
February	141,631	4%
March	281,510	9%
April	312,068	10%
May	310,977	9%
June	367,833	11%
July	395,717	12%
August	368,444	11%
September	309,967	9%
October	315,177	10%
November	188,405	6%
<u>December</u>	<u>167,856</u>	<u>5%</u>
Totals	3,282,461	100%

Source: NPS Public Use Statistics (2002)

The Region

The local region for Colonial NHP is James City County and York County, Virginia. These two counties are part of the Norfolk-Virginia Beach-Newport News, Virginia-North Carolina MSA region. The population of this MSA in 2000 was 1.73 million with an average income per capita of \$25,777. Total personal income was \$44.5 billion, and total full-time and part-time employment was 1.03 million jobs (Bureau of Economic Analysis, 2002). Government, military and education sectors form the primary economic base for the region (Table 2). These three sectors account for 37% of total personal income and 26% of total jobs. The restaurant sector generated \$656 million in personal income in 2000, followed by the lodging sector (\$268 million) and amusements and recreation services (\$121 million).

Tourism is the primary economic base for James City County where Colonial Williamsburg is located. Lodging, restaurants, amusements and retail trade sectors account for 40% of all jobs in the county (IMPLAN data files, 1999 or replace with BLS). The Virginia Tourism Authority estimates traveler spending in James City County at \$253.5 million in 2000. Another \$94 million is spent by tourists in nearby York county, bringing the two county area total to almost \$350 million.

Table 2 Economic activity by sectors in Norfolk-Virginia Beach-Newport News, Virginia-North Carolina MSA, 2000

	Earnings by place of work (\$ million)	Pct of total earnings	Jobs
Farm	204	1%	5,314
Agriculture, fishing and forestry	D		D
Mining	D		D
Construction	1,985	6%	61,342
Manufacturing	3,331	10%	78,638
Transportation & Communication	1,579	5%	40,865
Wholesale Trade	1,284	4%	32,981
Retail Trade	2,673	8%	171,476
Eating & Drinking places	656	2%	50,872 ^a
Finance	1,763	5%	65,444
Services	7,464	23%	287,747
Hotels and other lodging places	268	1%	D
Amusement and recreation services	121	0%	9,381 ^a
<u>Govt, Education</u>	<u>12,411</u>	<u>37%</u>	<u>273,359</u>
Total	33,119	100%	1,033,215

D: Not shown to avoid disclosure of confidential information

a: Employment numbers excludes sole proprietors.

Source: Bureau of Economic Analysis, 2002 and Bureau of Labor Statistics, 2002

Colonial National Historical Park Visitor Survey, 2001

A park visitor study was conducted at Colonial NHP- Jamestown Island from June 24th to 30th, 2001. The study measured visitor demographics, trip planning, travel expenditures, and facility importance and quality. Questionnaires were distributed to a sample of 600 visitors at two locations inside the park¹. Visitors returned 475 questionnaires for a 79.2% response rate. Data generated through the visitor survey were used as the basis to develop the spending profiles, segment shares and trip characteristics for Colonial NHP visitors.

The survey only covers visitors to Jamestown Island and may not represent "off-season visitors". Nevertheless, we will use the VSP survey data to extrapolate to Colonial NHP visitors in 2001. Several questions on the survey capture the role of Colonial NHP in the overall tourist picture. Three fourths of Colonial NHP visitors are in the area as part of a vacation trip, only

¹ Questionnaires were distributed proportionally at visitor center parking lot (96%) and glass-house parking lot (4%).

14% explicitly listed an NPS visit as the primary reason for the trip to the area. Four out of five visitors are staying overnight in the area, with an average stay lasting about 3 nights.

Forty-three percent of those interviewed at Jamestown Island had also visited Yorktown and 76% had visited Colonial Williamsburg, 74% had visited Jamestown Settlement, operated by the Commonwealth of Virginia. Colonial NHP visitors spent about two hours on Jamestown Island. Only six percent visited the park on more than one day. The average party size was about 3 people. This is higher than the figure of 2.4 used by the NPS to convert vehicle counts to recreation visits.

MGM2 Visitor Segments

MGM2 divides visitors into segments to help explain differences in spending across distinct user groups. Overnight visitors were distinguished from day visitors based on the lodging type reported in the Colonial NHP Visitor Survey questionnaire. Day visitors were divided into two groups depending on the visitor's ZIP code to identify local and non-local visitors. Four lodging segments were established for Colonial NHP visitors:

Local day users: Day visitors who reside within an hour driving distance (within 50 miles of the park).

Non-local day users: Visitors from outside the region, not staying overnight in the area. This includes day trips and pass-through travelers. Visitors staying with friends/relatives or at an owned seasonal home in the area are also included in this category.

Motel-out: Visitor staying in motels, cabins, B&B's etc. outside the park within the region

Camp-out: Visitors staying in private or other public campgrounds outside the park within the region.

Based on the VSP survey, we estimate that 63% of park visits are by visitors who are staying overnight in area motels, 25% are visitors on day trips from outside the local area, 6% are camping in the area and 6% are local residents.

A recreation visit is the count of one person entering the park. Spending depends on how long visitors stay in the area rather than how many times they enter the park or how much time they spend inside the park. Recreation visits are therefore converted to party days/nights in the region before applying spending averages. This avoids double counting spending of visitors who may enter the park multiple times on the same day and also takes into account additional days a visitor may spend in the area outside the park.

Recreation visits are converted to party nights² as follows:

Party entry to the park = recreation visits / party size

Party trip to the park = party entry/ re-entry rate

Party nights in the area = party trip* length of stay in the area

² A party night is a travel group staying one night in the area. The travel group is usually all individuals in the same vehicle or staying in the same room or campsite. For day trips, estimates are in party days.

Although the average party size in the VSP study was slightly above 3.0, we use the official NPS conversion factor of 2.4 people per car, as this will correctly convert the recreation visit estimates back to vehicles or parties. Determining the extent of double counting of visitors is more problematic. Visitors to Jamestown and Yorktown areas are tallied independently. Park visitor count protocols include counts at the Williamsburg traffic circle, while the most recent detailed vehicle count figures (December 2001) appear to count vehicles at both the Jamestown entrance and Visitor Center. The December 2001 IO-157 form reports 790,100 recreation vehicles in 2001 at Colonial NHP. Ignoring buses, this is only slightly higher than our estimate of 725,000 party trips in Table 3.

Table 3. Converting Colonial NHP Visits to Party Nights

Segment	Local day	Non-local day	Motel-Out	Camp-Out	Total
Segment shares	6%	25%	63%	6%	100%
Recreation Visits (000's)	197	821	2,068	197	3,282
Re-entries	1	2	2	2	
Person trips (000's)	197	410	1,034	98	1,740
Party size (people per vehicle)	2.4	2.4	2.4	2.4	
Party trips (000's)	82	171	431	41	725
Length of Stay (days/night per trip)	1	1	3	3	
Party nights in area (000's)	82	171	1,292	123	1,669
Percent of nights	5%	10%	77%	7%	

The 3.28 million park visits in 2001 converts to 1.74 million person trips to the area and 725,000 party trips. Assuming an average length of stay of 3 nights for overnight visitors, park visitors account for 1.67 million party nights in the region, including 1.3 million motel/hotel room nights. These figures count all nights that park visitors spend in the area.

Visitor spending

Spending averages were estimated from the Colonial NHP Visitor Survey. Spending averages were computed on a party trip basis for each segment and then converted to a party night basis by dividing by the average length of stay. The survey covered expenditures that occurred within an hour driving distance or roughly a 50-mile radius of the park. Spending averages per party per night by segment are shown in Table 4.

Table 4. Visitor Spending by Lodging Segment in Local Area

CATEGORY	SEGMENT				
	L-Day User	NL-Day User	Motel	Camp	Half-day
Motel, hotel cabin or B&B	0.00	0.00	80.00	0.00	0.00
Camping fees	0.00	0.00	0.00	25.00	0.00
Restaurants & bars	23.05	25.04	55.96	19.20	20.00
Groceries, take-out food/drinks	0.48	5.13	7.53	12.72	3.00
Gas & oil	5.71	6.25	8.62	10.75	3.00
Local transportation	0.00	2.98	3.72	0.64	1.00
Admissions & fees	14.10	19.67	33.03	25.94	8.00
Souvenirs and other expenses	21.38	20.73	25.95	14.55	10.00
Total	64.71	79.79	214.81	108.80	45.00

Local day visitors spent \$65 per party per day while non-local day visitors spent \$80. Visitors staying at a hotel, cabin or B&B spent \$215 per night with a room rate of \$80. We estimate that campers spent \$109 per party per day in the region with \$25 dollars for the camping fees. Spending on admissions and fees is significantly higher than for other parks, reflecting the large number of museums and other attractions in the area. Visitors in motels would spend almost \$100 for the entire party on admissions during a three night stay in the area.

The “half-day” segment in Table 4 was constructed to reflect roughly a half-day’s spending in the area for Colonial NHP visitors. This profile will be used to make conservative estimates of the park’s economic impact. First, however, we apply the profiles for the first four segments to estimates of total party nights that park visitors spent in the region.

Total visitor spending may be calculated by multiplying the number of party-nights in the region (Table 3) by the spending averages (Table 4). The calculations are carried out segment by segment, summing across the four segments to obtain the total. Visitors to Colonial NHP in 2001 spent \$310 million in the local area (Table 5). Visitors spent \$103 million on motel/hotel rooms, \$80 million on restaurant meals, and \$50 million on admission fees, and \$41 million on souvenirs. Groups staying in motels account for 90 percent (\$278 million) of the total spending. A third of visitor spending is on lodging, 26% on restaurants and 16% on admissions and fees. Spending on admissions is likely higher for Williamsburg visitors who do not visit the National park.

The \$310 million spent by park visitors while in the region represents about 88% of the \$350 million that the Virginia Travel Commission estimates for all visitors to the two county area in 2000. If the majority of visitors to Colonial Williamsburg and other attractions in the area, include at least one visit to the National Park during their stay, the MGM2 estimates are roughly consistent with area tourism statistics. From the VSP survey we know that about three fourths of Jamestown Island visitors also visit Colonial Williamsburg, but we don't know what percentage of Colonial Williamsburg visitors do not visit either the Yorktown or Jamestown sections of the National Park.

Table 5. Total spending by Colonial NHP Visitors in the Region

	SEGMENT				Total	Percent
	Local	NL- Day Trip	Motel	Camp		
Motel, hotel cabin or B&B	0	0	103,398	0	103,398	33%
Camping fees	0	0	0	3,077	3,077	1%
Restaurants & bars	1,891	4,280	72,326	2,364	80,861	26%
Groceries, take-out food/drinks	39	877	9,733	1,566	12,215	4%
Gas & oil	469	1,068	11,138	1,323	13,998	5%
Local transportation	0	510	4,810	79	5,398	2%
Admissions & fees	1,157	3,363	42,690	3,193	50,402	16%
<u>Souvenirs and other expenses</u>	<u>1,755</u>	<u>3,544</u>	<u>33,538</u>	<u>1,791</u>	<u>40,627</u>	<u>13%</u>
Total	5,311	13,642	277,632	13,392	309,977	100%
Percent	2%	4%	90%	4%	100%	

Colonial NHP clearly cannot lay claim to all of this spending. Much of it would take place in the absence of the park. The question of how much spending would be lost to the area if the park did not exist is not easy to answer. Our approach is to attempt to capture the additional spending due to the park. This includes all spending on trips to the area that would not be made in the absence of the park plus additional spending by visitors to the area to include a park visit as part of their itinerary. After examining several possible scenarios, we chose to count a half day of spending for all park visitors (\$45 per party) and to also count one night of spending for 10% of the park visitors staying overnight in the area. Under this scenario the park claims a half-day of spending for all day visitors and also a half day of spending for 90% of the overnight visitors. Ten percent of the overnight visitors are assumed to stay an extra night in the area to visit the park. One full night of lodging and other expenses are counted for these visitors. This scenario generates roughly \$40 million dollars in visitor spending that can be attributed to the park, or roughly 13% of the \$310 million spent by park visitors while in the area³.

Economic impacts are estimated for the \$40 million in spending that is attributed to the park.

³ Counting one night of spending including lodging for all overnight visitors yields \$115 million in spending, while attributing a half day of spending for all visitors (no lodging expenses) yields \$33 million.

Economic Impacts of Visitor Spending

The \$40 million spent by Colonial NHP visitors has a direct economic impact on the region of \$34 million in direct sales, \$12.5 million in personal income (wages and salaries), \$18.6 million in value added, and supports 917 jobs in the region⁴ (Table 6). Under this scenario, the restaurant sector received the largest amount of direct sales (\$16 million), followed by amusements/museums (\$7 million) and retail trade (\$5 million).

Direct effects are less than total spending, as only the retail and wholesale margins on visitor purchases of goods accrue to the local economy. The local region surrounding Colonial NHP captures 85% of visitor spending. Fifteen percent of visitor spending leaks out of the local economy to cover the costs of imported goods bought by visitors⁵.

The sales multiplier for the region is 1.44, meaning that an additional \$0.44 in sales is generated through secondary effects for every dollar of direct sales. Secondary effects generated an additional 205 jobs, about \$5.3 million in personal income and \$9.2 million in value added.

**Table 6. Economic Impacts of Colonial NHP Visitor Spending :
Direct & Secondary Effects**

Sector/Spending category	Direct Sales \$000's	Jobs	Personal Income \$000's	Value Added \$000's
Direct Effects				
Motel, hotel cabin or B&B	3,447	56	1,124	1,708
Camping fees	103	2	33	51
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Total Direct Effects	34,098	917	12,497	18,616
<u>Secondary Effects</u>	<u>14,866</u>	<u>205</u>	<u>5,311</u>	<u>9,179</u>
Total Effects	\$ 48,964	1,122	\$ 17,808	\$ 27,795
Multiplier	1.44	1.22	1.42	1.49

⁴ The MGM2 "small metro" region multipliers were used with adjustments of job to sales ratios for the lodging, restaurant, amusements and retail trade sectors based on figures for the two county region.

⁵ For example, if a visitor buys \$50 dollars worth of clothing at a local store, the store receives the retail margin (assume \$20 dollars), the wholesaler or shipper (if local) may receive \$5 dollars, and the remaining producer price of the clothing (\$25 dollars) leaks immediately outside the local economy, unless the clothing is manufactured in the local region.

Study Limitations and Error

The accuracy of the MGM2 estimates rests on the three inputs: visits, spending averages, and multipliers. Multipliers are provided by the MGM2 model using the “small metro” region multipliers. Visits and spending averages are derived from the 2001 Colonial NHP Visitor Survey. These are subject to sampling errors, measurement errors and seasonal/sampling biases.

The Colonial NHP Visitor Survey was conducted during a single 7-day period and only covers visitors to Jamestown Island. Visitors to Yorktown, who also visit Jamestown Island are represented, but some differences may exist among visitors who only visit Yorktown. Patterns of use and spending may also vary seasonally⁶. The sampling errors on the average spending per party night were 4% overall and ranged from 4 to 24% for individual segments⁷. Our analysis omitted cases with spending more than \$1000 per party day and cases with missing values on all spending categories.

There is considerable uncertainty about double counting of visitors. We assumed a re-entry factor of 2 for all the non-local segments, suggesting each visitor is counted twice during their stay in the area. This figure yields total spending estimates that are at least within the range estimated by the Virginia Tourism Commission.

These technical sources of error are, however, small compared to variations in impacts under different scenarios about which spending should be counted. Park visitor spending in the area ranges from \$310 million if we count all spending while in the region to \$33 million, if we only count the equivalent of a half day’s spending for each park visitor. Our recommendation is to treat most park visitors as half-day visitors and to count one night’s spending for 10% of the overnight visitors. This yields a visitor spending figure of \$40 million that may be attributed to the impact of the park.

Suggested research to further refine the spending and impact estimates includes (1) surveys of park visitors to both the Jamestown Island and Yorktown Battlefield during other months to better assess seasonal variations, (2) a survey of bus visitors to better understand their travel and spending patterns, and 3) surveys of visitors to the region in cooperation with local tourism organizations to better understand the role of the park within the broader regional tourism picture.

⁶ Some adjustments were made to capture expected seasonal differences, e.g. more locals and day visitors during the off-season, lower rates and spending, somewhat shorter stays.

⁷ The sampling error of spending average depends on the number of cases sampled and the variation in the sample. A small number of samples will typically introduce a larger sampling error.

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Appendices

Appendix A: Definition of Terms in the MGM2 Model

Terms	Definition
Sales	Sales of firms within the region to park visitors.
Jobs	The number of jobs in their region supported by the visitor spending. Job estimates are not full time equivalents, but include part time and seasonal positions.
Personal income	Wage and salary income, proprietor's income and employee benefits.
Value added	Personal income plus rents and profits and direct business taxes. As the name implies, it is the value added by the region to the final good or service being produced. It can also be defined as the final price of the good or service minus the costs of all of the non-labor inputs to production.
Direct effects	Direct effects are the changes in sales, income and jobs in those business or agencies that directly receive the visitor spending.
Secondary effects	These are the changes in the economic activity in the region that result from the re-circulation of the money spent by visitors. Secondary effects capture the sum of indirect and induced effects.
Indirect effects	Changes in sales, income and jobs from industries that supply goods and services to the business that sell directly to the visitors. For example, linen suppliers benefit from visitor spending at lodging establishments.
Induced effects	Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect of the visitor spending. For example, motel and linen supply employees live in the region and spend the income earned on housing, groceries, education, clothing and other goods and services.
Total effects	Sum of direct, indirect and induced effects. <ul style="list-style-type: none"> ▪ Direct effects accrue largely to tourism-related business in the area ▪ Indirect effects accrue to a broader set of economic sectors that serve these tourism firms. ▪ Induced effects are distributed widely across a variety of economic sectors.
Marginal impacts	Economic impacts created by per additional visitors or dollars spent.